Contributions to Practical Surgery.

BY

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CONTRIBUTIONS TO PRACTICAL SURGERY.

In everyday life there can be little doubt that a proper management of trivial difficulties or discomforts is of infinitely greater importance in rendering life happy, than the power to overcome great and rare difficulties when they arise. Our daily life is happy, or the contrary, in so far as we are able to get the better of our daily annoyances. Of surgical practice the same may with truth be said. The more frequently a case occurs, the more important is it in surgical practice. A medical practitioner may spend many years without ever coming across those rare cases, the consideration of which fills the pages of medical literature. The commonplaces of surgical practice are apt to be overlooked by the hospital surgeon. He is tempted to forget their value, and to spend the main portion of his time in lecturing and writing on the major and rare operations, and to pass by as of less importance the minor and common operations. The surgery of daily life is forgotten in a desire to dwell on the rarities of surgery. Every one is supposed to know the best way to treat a simple incised wound or a simple fracture—or how to treat a case of piles, or a simple stricture of the urethra—a contusion of a joint, or a case of traumatic synovitis—an abscess or a boil—a scalp wound or a bursitis; and the hospital surgeon, supposing that these common affections are understood, gives instead a detailed account of complicated wounds and severe compound fractures—of excision of the rectum, and the treatment of strictures complicated with urethral fistulæ—of lithotomy, nephrotomy, and ovariotomy. These are examples of a tendency in surgical writings. In this and the following papers I will attempt to avoid this tendency, and will speak rather of those common cases which the general practitioner is accustomed to meet with and called on to treat; and if I seem to tell of too simple things, I trust that I am excused if I assist the junior practitioner to practise with more comfort to himself the surgery of common life.

I. The Head and Neck.

1. When the surgeon is called to a scalp-wound, he has first to

satisfy himself as regards its depth. If it does not implicate the pericranium, it may be looked upon as a comparatively trivial accident; but if the pericranium is torn, the bone is exposed, and the probability is that the blow has been a severe one, and that the bone is more or less bruised. To discover the exact condition of the wound, the finger is the best probe, and the finger-nail passed over the exposed bone is the best guide to the exact condition of the bone. The probe is not nearly so certain an instrument in diagnosing the presence of a fissure. When the pericranium is torn and the bone bruised, the injury to the soft parts is of minor importance; the injury to the bone and its pericranial covering is of special importance. In such a case the application of a pad of dry lint, fixed in position by a roller bandage, may result in rapid union; but of such treatment every now and then disastrous results followed. The wound became uneasy, and tension occurred under the lint, necessitating its removal and the application of a poultice. In some instances inflammation subsided, and the wound healed by the second intention. In others, however, the inflammation extended through the bone to the diploë, and from the diploë to the membranes of the brain. The wound, assuming an unhealthy action, with swollen edges, received the name "Pott's puffy tumour." Symptoms of intracranial inflammation, if persistent, necessitated the use of the trephine. Suppuration had occurred in the diploë, and in more severe cases between the inner table and the dura mater, or in the arachnoid cavity under the dura mater. In such cases it was necessary to incise the dura mater. The result was generally fatal, no cessation in the inflammatory action taking place, and the patient dying of diffused inflammation, extending from the seat of injury over the brain surface. These evil results were thought to be due to tension in the primary wound. Hence the rule as laid down, that no stitches were to be used in scalp wounds. We now know that these evil consequences were due to a septic condition attacking the wound, and extending through the bruised outer table to the diploë, and from the diploë to the membranes of the brain. The rule, therefore, now is in scalp wounds thoroughly to purify the wound with a 1 to 20 solution of carbolic acid, using, if need be, in cases in which the wound is ingrained with dirt, a nail-brush, with the free use of which a thorough purification can be effected. Any bleeding vessels are secured by ligature; a catgut drain is laid along the wound to ensure free drainage, and the edges of the wound are brought together with horsehair stitches. In the hairy scalp it is necessary to shave the edges of the wound. A piece of protective, covering not only the wound, but the extremities of the catgut drain, is applied; then a pad of gauze, the deeper layers of which have been damped with the lotion, or a pad of salicylic wool or Hartmann's wood wool, which is impregnated with corrosive sublimate. This must be carefully fixed in position with a bandage, and care must be

taken to apply this bandage in such a way that it will not come off, viz., by carrying the bandage round the head under the occipital protuberance above the eyebrows and under the chin, so as to make a complete cap. To ensure the stability of the bandage, it is safest to use a darning needle and darning cotton, with which the edges of the bandage may be carefully stitched together. This dressing, as a rule, may be left on for a week or ten days, when it is removed, and the wound is found dry. The horsehair stitches can then be removed.

A severe scalp-wound is sometimes complicated with fissured fracture of the vault of the cranium, and, as has been said already, the finger-nail is the best means of diagnosing a fissure. In such cases the treatment is the same as in a scalp-wound without fracture. In a fissured fracture of the base of the cranium, implicating the petrous portion of the temporal bone, the middle ear, and the membrana tympani, the external meatus should be carefully washed out with 1 to 20 carbolic lotion, and the ear stuffed with carbolic gauze. It is in reality a compound fissured fracture, and should be treated with careful antiseptic precautions. Depressed fractures of the cranium are either simple or compound. In simple depressed fracture the surgeon should not trephine until there are well-marked symptoms of compression. In compound depressed fracture there is a tendency in the present day to wait for symptoms before elevating the depressed fragments. For my own part, I am of opinion that the elevation of the depressed fragments does not in itself increase the danger. If the surgeon waits until symptoms have appeared, the accompanying inflammation of the membranes cannot with any certainty be checked by the elevation of the fragments; and therefore I am of opinion that in the adult, at any rate, the fragments should be elevated without delay. In children the resiliency of the bones is such that, in uncomplicated cases of compound depressed fracture, the surgeon may wait for symptoms; but even in them, in a severe case, it would be well to elevate the fragments at once.

In punctured fractures, which are always compound, all are agreed that trephining should be performed at once, because the sharp splinters of the dense inner table will sooner or later cause inflammation of the membranes of the brain.

The experimental researches of Hitzig and Ferrier into the localization of the motor areas grouped around the fissure of Rolando have increased the interest of those injuries to the practical surgeon; and it is of great importance that a careful record of the symptoms in all cases of injury in that region should be kept. In order to do this with facility, the surgeon must be able to localize the exact situation of the fissure of Rolando. Various rules are laid down for this purpose. In the writer's opinion, one of the simplest methods is that described by Mr A. W. Hare in the *Journal of Anatomy and Physiology* (Jan. 1884).

As the result of his observations, Mr Hare found that "the distance from the glabella to the fissure (of Rolando) was on the average 55·7 per cent. of the distance from the glabella to the external occipital protuberance." The "general direction of the fissure" was ascertained by "noting the angle which its axis, as represented by the line between its extremities, forms with the mesial line of the head." The average angle in the eleven cases examined was found to be 67°.

2. The tumour of the scalp of most common occurrence is the wen, a thick-walled cyst containing sebaceous matter. It is unnecessary in the removal of a wen to cut away the hair over it. All that is required is to make a linear parting with a comb over the tumour, and the tumour is then transfixed with a sharp-pointed curved bistoury, the incision being directed towards the vertex, to avoid injury to the bloodvessels. The most superficial part of the cyst wall is often friable; and as it is of importance to remove the cyst wall entirely, the dissecting forceps with which the cyst wall is grasped must not be applied to the superficial friable portion; but one blade of the forceps should be pushed under the cyst at one extremity of the incision, the other blade grasping the inner surface of the cyst, and then, with a quick jerk, the whole cyst is removed without any laceration.

Thin-walled cysts are frequently met with about the eyebrows. These cysts require to be dissected out, and if any portion of the cyst wall is left, they are apt to return. In the dissection of these thin-walled cysts the wall is very apt to give way, the contents escape, and the cyst collapse; and if an attempt is made to finish the dissection in the collapsed condition, portions of the cyst wall may be left. The difficulty is overcome in a very simple way. If the cyst bursts during the dissection, squeeze out the contents, and stuff the cavity completely with a strip of lint, so as practically to change the cyst into a solid tumour; and if this is done, the dissection can be completed without difficulty.

3. In wounds of the face, the best stitch to use is horsehair. Unless the wound is of considerable size, no form of drainage is necessary. The best dressing is a pad of salicylic cotton wool or corrosive wool, fixed in position with flexible collodion.

4. The introduction of the sharp spoon into surgical practice has greatly simplified the treatment of lupus. In the use of the sharp spoon, special care must be taken to scrape away the raised edges of the lupoid ulcer, as it is here that the pathological change is advancing. This is best done by scraping from the sound skin towards the centre of the ulcer. After the new formation is completely removed, the best application is a powder, which has been introduced into surgical practice by Dr Lucas Championnière of Paris. It consists of (1) light carbonate of magnesia, which has been impregnated with the vapour of eucalyptus, (2) powdered benzoine, and (3) iodoform in equal quantities.

5. In old people soft warty growths are often met with on the face. It is a dangerous practice to apply irritating caustic substances to these growths, because if they are irritated they are apt to take on an epitheliomatous action. They are best treated by excision.

6. As the result of cold, acute inflammations sometimes occur in the parotid and submaxillary regions under the strong fascia. Unless tension is relieved by the timely application of leeches or by incision in these cases, suppuration is apt to occur under the fascia. If the incision is made entirely with the knife, important structures may be divided; and in these situations, as well as in deep-seated inflammations below the sterno-mastoid muscle, in the posterior triangle of the neck, and in the axilla, Hilton's method should always be adopted. A short incision is made through the skin and subcutaneous tissue, and a grooved director is then insinuated through the fascia into the inflammatory area. If no pus appears, then the director is withdrawn; and the hæmorrhage which results from the puncture, and the escape of the serous effusion through the opening of the fascia, may be followed by the subsidence of the inflammation. If pus appears along the groove in the director, then a pair of dressing forceps is passed along the groove into the abscess; the director is withdrawn, the forceps remaining in position; the forceps are then opened and withdrawn, with their blades apart, in order to enlarge the opening in the fascia, allowing of the free escape of the pus and the introduction of a drainage-tube. By this method all deep-seated suppurations can be opened without risk of injury to important structures.

7. In the removal of epitheliomatous tumours affecting the lower lip, the subcutaneous injection of a 4 per cent. solution of cocaine into the tissues around the tumour enables the surgeon to remove the mass without pain. This drug can also be used in a similar manner in the removal of an epitheliomatous nodule from the tongue.

8. In strumous enlargement of the glands of the neck, cicatricial deformity, which necessarily occurs if the suppurating masses are allowed to open of themselves, or if they are simply opened when pointing, takes place. There can be no doubt that the best way to treat such cases is either to excise the enlarged glands in the early stages of the disease, before they have become matted to the surrounding tissues by inflammation; or in the later stages of the disease, when suppuration has occurred, the sharp spoon must be freely used, in order to remove entirely the degenerating gland tissue. Rapid healing and less deformity is the result. The danger also of secondary mischief in the lungs and elsewhere is in this way minimized. Tumours of the neck occurring under the sterno-mastoid muscle are divided into simple and malignant growths. If simple in character, they may be removed, however large they may be, with comparative safety. The great points to

be attended to are—free access to the growth, and a dissection down to the tumour. If malignant, they should, as a rule, be left alone.

9. The removal of foreign bodies from the nasal cavity is best effected by the use of a small scoop. The foreign body is best seen by the aid of reflected light from a laryngoscopic mirror. The scoop is introduced horizontally above and beyond the foreign body. The handle of the instrument is then elevated, tilting the foreign body out through the anterior opening. The sensitiveness of the mucous membrane of the nose is greatly diminished by painting the parts with a solution of cocaine.

10. In persistent hæmorrhage from the nasal cavity, plugging of the posterior nares should not be done until an attempt has been made to check the hæmorrhage by firmly grasping the nose with the finger and thumb, so as to completely prevent any air passing through the cavity in the act of breathing. This simple means, if it is persistently tried, will in many cases arrest the bleeding. The hæmorrhage persists because the clot, which forms at the rupture in the bloodvessel, is displaced by the air being drawn forcibly through the cavity in the attempt of the patient to clear the nostrils. If this air is prevented from passing through the cavity, the clot consolidates in position, and the hæmorrhage is checked.

11. In the reduction of a dislocation of the lower jaw, the patient should be seated on a low stool before the surgeon. In this way the surgeon gets a sufficient leverage, standing above the patient, and the reduction of the dislocation is simplified.

12. In the division of a tight frænum of the tongue, when a child is tongue-tied, care must be taken not to use the scissors too freely. All that is necessary is, standing behind the patient, to nick the anterior edge of the frænum with the scissors, and to tear with the finger-nail the remainder of the band. In this way hæmorrhage, which is apt to be troublesome, is prevented.

13. In the treatment of ranula by grasping the cyst wall with a pair of catch-forceps, and removing an elliptical portion with curved scissors, the wound is apt to heal too rapidly before the cyst contracts, and a reaccumulation of the glairy fluid is apt to occur. By seeing the patient daily for a week, in order to introduce a probe into the incision, too rapid healing is prevented.

14. It is not always easy to make a diagnosis between syphilitic disease and epithelioma of the tongue. Syphilitic disease is generally central, an epithelioma lateral. The administration of iodide of potassium is often recommended in doubtful cases, in order to clear up the diagnosis. Care must be taken not to be deceived by a temporary improvement, because there can be little doubt that this does occur in epithelioma by the persistent use of iodide of potassium.

15. In the removal of an elongated uvula, after you have

grasped the apex of the uvula, it is to be drawn forward and rendered tense before division. If it is simply grasped, and an attempt made to divide it in its normal position, it is not always an easy matter to effect the object desired. When it is rendered tense the operation is a very simple one.

16. In acute tonsillar inflammations in which suppuration is suspected, a Græfe's knife is the best instrument with which to make the diagnostic puncture. This instrument is of the greatest use in all cases of suspected suppuration. After the knife is introduced into the inflammatory area, it is rotated, and if pus is present it escapes at the side of the knife. The incision can then be enlarged, so as to allow of the free escape of the matter. If there is no pus present, the knife can be withdrawn. In the case of the inflamed tonsil, the puncture may be repeated at two or three different points, and the resulting hæmorrhage often relieves the inflammation. The knife should always be pushed directly backward, to avoid any risk of wounding the internal carotid trunk. In a large proportion of cases of inflamed tonsil the suppuration occurs at the upper extremity of the tonsil, and the matter can only be properly reached by introducing the knife through the soft palate. Any fulness and inflammatory redness of the palate is an indication for a puncture in this situation. The removal of a portion of a chronically enlarged tonsil should not be performed when there is any acute inflammation present. In performing this operation on the adult, the tonsil should be grasped with a vulsellum, and the projecting portion removed, the surgeon cutting from above downwards in a vertical direction with a probe-pointed bistoury. To avoid injury to the dorsum of the tongue, a piece of lint should be wrapped round the blade of the knife, so as to cover that half of the cutting edge which is nearest the handle. The probe-pointed knife used should cut to the point, and must be very sharp, in order that the operation may be done satisfactorily.

17. In opening a retropharyngeal abscess, the operation cannot be performed with antiseptic precautions if the abscess is opened from the mouth; and in those cases in which there is any suspicion of disease of the vertebræ, the abscess should be opened by Hilton's method, which has already been described, the matter being reached through an incision along the posterior border of the sterno-mastoid muscle, an inch below the apex of the mastoid process of the temporal bone.

18. When a surgeon is called in a hurry to a case of choking, he should not delay in order to obtain œsophageal forceps or probangs, because, if the foreign body has reached the œsophagus, the immediate risk to the patient's life has passed away. If death is imminent, then the foreign body, generally a piece of meat, is in the pharynx and blocking up the rima glottidis, or it has passed into the box of the larynx. If in the first situation, it can be

displaced by the finger. If in the second situation, the operation of laryngotomy is called for.

When the obstruction is complete, there is no time to perform the more difficult operation of tracheotomy. If the foreign body has reached the œsophagus, if it is a piece of meat or a piece of bread, or any digestible substance, the simplest way to get rid of it is to push it onwards into the stomach with a probang. If, however, it is a metallic substance, *e.g.*, one of the larger coins, or a metallic tooth-plate, it should, if possible, be removed by the mouth. Before attempting removal, the first point to clear up is the exact situation of the foreign substance. This is best done by passing a bulbous-shaped bougie. The bulbous head, measuring about half an inch in transverse diameter, should be made of solid metal, giving the instrument a certain weight. The stem of the instrument should be of whalebone, about the size of a No. 8 catheter. If this instrument is passed along the œsophagus, the foreign body may be felt as the instrument is passed downwards. In some cases, however, the obstructing substance will be best localized as the instrument is being withdrawn, and in the withdrawal of the instrument the foreign body may be brought up along with it. Should this fortunate result not take place, an endeavour must be made to grasp the foreign body with forceps. If the metallic substance cannot be removed by the mouth, the operation of œsophagotomy must be performed.

If the foreign body has passed into the trachea, the operation of tracheotomy should be performed before inverting the patient. There is a risk in inverting the patient before performing tracheotomy, because a substance may stick in the box of the larynx and choke the patient. If this occurred, then tracheotomy would be called for, and in the hurry could not be properly performed.

19. *Hare lip.*—This congenital deformity may be single or it may be double. If double, the præmaxillary central projection may, if of any size, after partially dividing its base, be displaced backwards, and utilized to fill up the gap between the superior maxillary bones. As a rule, however, if it is rudimentary, after dissecting off the triangular portion of skin upon its surface, it may be removed. In doing this the hæmorrhage is often profuse, and must be checked by pressure before proceeding with the operation. The malformed upper lip is often tacked down to the maxillary bones, and the mucous membrane must be freely divided so as to allow the edges to come into easy apposition. The edges are to be freely pared, and care is to be taken to avoid a cleft at their point of junction at the edge of the lip.

20. *Tracheotomy.*—This operation is called for in cases of laryngeal difficulty of breathing. The trachea is nearest to the surface at its upper part, and the high operation above the isthmus of the thyroid is more easily performed than the low operation below the isthmus of the thyroid. The deep veins are com-

paratively unimportant above the isthmus, while below the isthmus the inferior thyroid veins are of large size. Care must be taken in the administration of chloroform that the patient be not deeply narcotized, in order that he may be able after the trachea has been opened to cough up any blood which may pass through the tracheal wound into the trachea. In performing the operation the knife should be used until the sterno-hyoid and sterno-thyroid muscles have been separated. When this stage is reached, the upper tracheal rings should be cleared with the director, the best for this purpose being Spence's hernia director. If this director is used, the risk of wounding the deep veins lying on the trachea is lessened. If these veins are wounded they should be ligatured, and all bleeding should have ceased before the trachea is opened. No attempt should be made to open the trachea until the upper rings above the isthmus are fully exposed. The tracheal rings are best divided with a sharp-pointed curved bistoury. A sharp hook is passed into the substance of the cricoid cartilage: the isthmus of the thyroid is depressed with the forefinger of the left hand, the finger-nail looking upwards towards the cricoid cartilage; and, the back of the knife resting upon the finger-nail, the knife is pushed into the trachea, and the surgeon cuts the uppermost rings between the isthmus and the cricoid cartilage. The handle of the knife is introduced into the slit thus made, and is then turned transversely, so as to separate the edges of the tracheal incision. The tracheal tube is then introduced. At first the tube is held at right angles to the long axis of the tracheal wound, until the extremity of the tube is fairly within the tracheal cut, when the long axis of the tube is carried to the middle line, and the tube is pushed onwards into the trachea.

The primary object of the operation is to relieve the laryngeal obstruction, and to allow air to reach the lungs. The operation, however, has a secondary value—the inflamed larynx is rested. After this operation the patient may die either of the disease for which the operation has been performed, or he may die from blood which has passed into the trachea during the operation reaching the ultimate bronchi, and giving rise there to septic lobular pneumonia. Hence the importance of preventing as much as possible any blood from passing into the trachea during the operation.

21. In severe cases of suicidal cut-throat, a transverse direction of the wound causes great gaping of the edges. The wound is generally close above the box of the larynx, or it may be through the thyroid cartilage. As a general rule, the safest thing for the patient is to perform tracheotomy immediately, and carefully to stitch together with catgut the different structures which form the sides of the gap, but the skin and subcutaneous tissues with deep stitches of double horsehair. Prevent tension on these

stitches by keeping the head well forward, and introduce a drainage-tube at either corner of the wound. The depressed condition of the patient, and the risk of a persistence of the suicidal tendency, require that he should never be left without an attendant. He must get plenty of nourishment. This is best administered through a large-sized catheter introduced through the mouth or nose, past the wound, into the upper part of the œsophagus.

II. The Abdomen and Pelvis.

22. *Hernia.*—The application of a truss in the treatment of this common affection must not be looked upon as simply palliative. In old people with long-standing herniæ the curative action of a truss cannot be looked for; but in all recent cases at all ages a truss must be applied, not simply as a palliative, but in order to effect a cure. The younger the patient, the greater is the probability of this good result. The hernial protrusion, after it has once been reduced, should never be allowed to come down again. Although in the recumbent posture the chances of the hernial protrusion occurring are diminished, still, as any exertion, as in the act of coughing, may during the night cause the protrusion, a truss should therefore be worn day and night. During the night less pressure is required to keep up the hernia, and if a spring truss is irksome to the patient the hernia may be kept up by a thick pad of layers of lint or layers of flannel, fixed in position by an elastic spica bandage.

(*a.*) In inguinal hernia a double spiral truss is preferable to a single-headed truss. In young children the presence of an inguinal hernia on one side indicates a tendency to hernia on the opposite side; in the adult the same factor is at work, although in a less degree; for this reason the use of the double-headed truss is indicated. A double-headed truss also fits more comfortably, and gives that general support to the lower part of the abdominal wall which renders the patient infinitely more comfortable than if he used simply a single-headed truss. In inguinal hernia care must be taken that the pad of the truss does not press on the spine of the pubis. In the oblique variety the principal pressure should be over the situation of the internal abdominal ring, and the head of the truss should not extend to a lower level than immediately below Poupart's ligament. Otherwise, when the patient stoops, the tissues of the thigh, pressing on the lower border of the head of the truss, are apt to displace it in an upward direction and render it inefficient, the hernia escaping below it. Although in some rare cases a perineal band may be necessary, every endeavour should be made to avoid its use, as it is irksome. The wearing of a piece of boracic lint below the pad of the truss prevents chafing and irritation of the skin, and the parts are kept dry, the presence of the lint allowing of free evaporation. The pad must be flat and

have no tendeney to press into the inguinal eanal. All that is required is to support the weakened wall, and any pressure into the canal tends to weaken by atrophy the structures which form its walls, and in this way to prevent a radical cure. Everything should be done by the surgeon to imitate Nature's way of curing a hernia, namely, by contraction of the neck of the sac and contraction of the faseial structures which surround the neck of the sac. The surgeon should see to the application of the truss himself, and not trust it to any instrument-maker. The weaker the truss the better, as long as it fulfils its object, namely, keeping the hernia up. Each time the hernia is allowed to come down the tissues are stretched. The good work of weeks is undone by a single protrusion, and hence the importanee of explaining to the patient the necessity of never allowing the hernia to come down.

(*b.*) In umbilical hernia the natural tendency to eontraction of the abdominal opening is interfered with if a nipple-shaped pad is used. The pad must be flat, of a eonsiderable size and thickness, and in the ehild it is best kept in position by the use of a broad elastie bandage. If the pad is made of layers of flannel, it should be plaeed next the skin, under the ehemise; the elastic roller is then passed round the body over the chemise, and a large safety-pin is passed through the bandage, ehemise, and pad, fixing the last firmly in position.

(*c.*) In femoral hernia the great depth of the erural ring through whieh the hernia protrudes prevents pressure being made direetly upon it, and in this form of hernia the use of a small nipple-shaped triangular pad, fitted on to the ball and socket joint of the Salmon & Ody truss, as first recommended by Professor Spence, is the most efficient means of keeping up the hernia. By the judicious use of what is termed a keeper, the lower extremity of the pad ean be tilted upwards and baekwards, increasing the efficiency of the appliance. In some eases of inguinal hernia, instead of the fixed head, the Salmon & Ody ball and socket pad arranged with a keeper may be found useful. In the *British Medical Journal* for 10th October 1885, Mr Rawlins suggests an arrangement in which a double-headed Salmon & Ody truss may be applied; this method appears in principle to the writer to possess many advantages, and it should certainly have a fair trial.

(*d.*) A hernia, apart from strangulation, is irreducible either in consequence of adhesions of the omental contents to the inner surface of the sac wall, or in consequence of induration and ehronic enlargement of the omental eontents after they have passed into the hernial tumour. In the former ease, in order to reduce the hernia, a eutting operation will be necessary, opening the sac, dividing the adhesions, and returning the contents. In the latter case, namely, where there is induration with thiekening of the omental contents, the reduction of the hernia is generally effected by prolonged treatment in the recumbent posture, the foot of the

bed being elevated, and the patient kept on low diet. Some years ago the writer had under his care a patient with a large irreducible inguinal hernia, in whom repeated attempts had been made to reduce the hernia by the methods indicated above. In that case, the continuous use of elastic pressure over the whole surface of the inguinal tumour, by means of an elastic bandage, enabled him to completely reduce the hernia after three days of continuous pressure. Since that time several cases of irreducible inguinal, femoral, and umbilical herniæ have been treated in this way with most satisfactory results; and in every case of irreducible hernia this method should receive a fair trial before cutting down and relieving the irreducibility by operation.

In the reduction of an inguinal hernia the mobility of the neck of the sac, where the constriction exists, is a great obstacle to reduction. It is therefore necessary to fix the neck of the sac with one hand before applying pressure over the hernial tumour with the other hand. If the hernia is of large size, the reduction is often facilitated by getting an assistant to fix the neck of the tumour, the surgeon applying pressure with both hands over the hernial mass. In femoral hernia it is impossible to fix the neck, and, although the anatomical relations here render the neck of the sac less mobile than in inguinal hernia, still the impossibility of grasping the neck during taxis is in all probability the main reason why taxis fails more frequently in femoral than in inguinal hernia. The pressure in femoral hernia is mainly on the apex of the tumour, and as the effect of pressure is often simply to change the shape of the tumour, its reduction is not effected. In inguinal hernia the neck of the sac can be fixed, and the pressure can be applied over the surface of the tumour in a more efficient manner.

(*e.*) When a hernia is strangulated, that is to say, when there is an obstruction to the blood-flow into and out of the hernial tumour, if taxis fails, there should be no delay in operating. It is often a very difficult matter in practice to distinguish a strangulated hernia from an inflamed hernia, in which there is an inflammation of the contents of the hernial tumour apart from strangulation. It is also difficult to diagnose a strangulated hernia from an obstructed hernia, in which there is an obstruction to the free passage of the contents of the bowel within the hernial sac. In the first case it is a local peritonitis, in the second a local constipation. Both conditions, if they persist, end in strangulation. When the surgeon is in any doubt, he should operate. In all cases in which there are any symptoms which may be referable to a strangulated hernia, a careful examination by sight and touch must be made of all the situations in which a hernia may exist; and if in any of these situations a swelling is discovered, however unlike it may be to a hernial tumour, the surgeon should cut down upon the swelling, and carefully examine its exact nature. He may find, for example, only an inflamed gland, or he may find a small hernial tumour

behind an inflamed gland. In the former case no harm has been done; in the latter case delay would probably mean a fatal result. Do not be deceived by a free passage of the bowels after the symptoms of strangulation have commenced. In women more particularly, two or even three free movements of the bowels may take place after complete strangulation. The bowels being loaded with fæcal matter, the passage of this fæcal matter per anum deceives the surgeon, and he delays operating until it is often too late. After operating, relieving the constriction, and returning the contents, ligature the neck of the sac, and stitch together the structures which surround the neck—perform, in other words, a double operation: firstly, relieve the strangulation; and, secondly, attempt to cure permanently the tendency to the formation of a hernia. In performing the radical cure, therefore, either after the operation for strangulated hernia, or after operating on an irreducible hernia which has resisted carefully applied elastic pressure, or after operating on a reducible hernia which cannot be kept up by a truss, imitate Nature's method of cure,—ligature with catgut the neck of the sac, and stitch together the anatomical structures which surround the neck of the sac.

23. *The Rectum.*—In all rectal affections there is often great depression of spirits. There is a close physiological connexion between the genito-urinary tract and the rectum. Very frequently a patient will come to you complaining of irritability of the bladder, which may be due to some rectal irritation, *e.g.* piles or fissure; and it is, therefore, a good rule in all cases of irritable bladder to make a careful examination of the rectum, anus, and perinæum. In all rectal examinations care must be taken to ascertain before making the examination that the patient is not suffering from acute syphilis. The discharge from an ulcer when the patient is in this state is infectious, and if there is any abrasion on the finger of the surgeon, he may be inoculated during the examination. In an examination of the prostate it is best to place the patient on his back; but in an examination of the posterior rectal wall the patient is best lying on his left side. In the married female, the surgeon with two fingers introduced into the vagina can by pressure cause protrusion of the mucous membrane of the rectum, and in this way assist the diagnosis in cases of fissure and of internal piles. The best way, however, of examining a male patient is to make him lean over the back of a chair. If the buttocks are then separated, much may be learned by a visual inspection of the perinæum. If there is any discharge the skin of the perinæum will be more or less excoriated, the area of excoriation corresponding to the portions of skin in apposition with each other. If there is a fissure, the opening of the anus will be firmly closed by the contraction of the sphincter, and the patient shrinks from any tactile examination. One small external pile is often an indication of the presence of a fissure

at its base. A venous pile, due to the rupture of a small vessel at the junction of the skin and mucous membrane, will be indicated by a bluish coloured projection at the seat of the rupture. A redundancy of the folds of skin around the anus indicates in all probability the presence of internal piles within the opening. A leathery appearance of the skin around the anus is seen in the affection termed pruritus ani. After a careful visual examination the finger well oiled is to be introduced gently, and with a rotatory movement into the cavity of the rectum. In some rectal conditions associated with an abnormal dryness of the mucous membrane in the narrow part of the canal corresponding to the internal sphincter, this dryness will be best overcome by the injection of an ounce of warm oil before attempting to introduce the finger. After the finger is fairly within the rectum, inflammatory affections of the mucous membrane will be indicated by increased heat within the rectum. The presence of a fissure will be discovered as the finger is being introduced. Some fissures lie immediately within the opening. In this case the lower extremity of the fissure will be observed by forcibly separating the buttocks, and stretching the skin around the anus. In other cases the fissure lies altogether within the opening, and can only be diagnosed by feeling it with the finger. An anal speculum may be used in doubtful cases, but the educated finger is the best diagnostic. The condition of the prostate is carefully to be noted. (1.) With regard to its size and its shape, increase in size of one or other of the lateral lobes indicating lateral hypertrophy of the gland. (2.) As to the presence of a soft point or points, indicating either inflammatory abscess or tubercular deposit in the process of disintegration.

In the examination of a fistula with a probe, the finger in the rectum will enable the surgeon to discover more easily the internal opening. In stricture of the rectum the stricture is almost always within reach of the finger, and the condition of the stricture can be carefully examined. After the finger is removed the presence of pus or slimy blood-stained mucus will indicate the existence of an ulcerated surface. Diarrhœa is often a symptom of stricture of the rectum, and in anyone above middle age who suffers from persistent diarrhœa a rectal examination should always be insisted upon in order to assist the diagnosis.

24. *Hæmorrhoids.*—The presence of internal hæmorrhoids is local evidence of a general congestion of the portal system, and only when there is great local discomfort, and after every endeavour has been made to improve the general condition of the patient by medicinal treatment, should operative procedure be undertaken. There is great difference of opinion as to the best method of treating internal piles when operation is necessary. If the ligature is used it should be soaked in a solution of chloride of zinc, 40 grs. to the ounce. It must be tied tightly, completely strangulating

the pile. If the ligature is tied loosely, acute inflammation followed by gangrene is the result. During the inflammatory stage, pain is severe, and many of the evil consequences which have followed the ligature have been due to its imperfect use. The injection of 10 drops of a 4 per cent. solution of cocaine into the base of the pile before applying the ligature greatly relieves the pain. If the pile is pedunculated, its base may be constricted by simply passing the ligature round it and tying it tightly. If the pile is sessile, its base should be transfixed with a curved needle carrying a double thread, each ligature being tightly tied so as to constrict one-half of the base. If the base of the pile is close to the opening of the anus, the division of the mucous membrane at the verge of the anus with scissors before tying the pile assists the more effectual application of the ligature and greatly lessens after-discomfort. If there is more than one pile, each pile must be attacked separately in this way. The ligatures being cut short, the strangulated masses are then pushed back, and a ½ grain morphia suppository introduced into the cavity of the rectum. The patient's bowels should have been thoroughly emptied before operation. The diet should be very light after the operation, and it is not necessary that the patient's bowels be moved until the third or fourth day. This is best done by the administration of castor oil by the mouth, and the discomfort felt during the movement of the bowels is greatly alleviated by the injection of 4 oz. of warm olive oil. Many patients suffer from retention of urine after this and other operations on the rectum, and it is therefore necessary to see the patient on the evening of the operation, and if he has not made water, a red rubber instrument must be introduced to evacuate the contents of the bladder. The use of the clamp and cautery has to a certain extent displaced the use of the ligature, but in the opinion of the writer the ligature, if properly applied, is as efficient as the cautery, and is less likely to be followed by hæmorrhage. Never operate in a case of internal piles without having first satisfied yourself that the patient is not suffering from cancer of the rectum. External piles are to be treated by removal with a pair of curved scissors, the cut surface being touched with a solution of chloride of zinc, 40 grs. to the ounce.

A patient may consult you, complaining of having felt a sharp, cutting pain during the passage of a hard fæcal mass. Visual examination of the anus will at once indicate what has happened. A small tumour of a bluish colour is seen at the opening of the anus, where the skin and mucous membrane meet. A sub-mucous vessel has given way, and the extravasated blood clots This condition may be treated by fomentations and rest. After a time the clot will be absorbed, but the process is a slow one, and it is better to transfix the mass with a sharp-pointed, curved bistoury — the clot being squeezed out and the cavity touched with a solution of chloride of zinc, 40 grs. to the ounce.

25. *Fissure.*—The pain in fissure is of a twofold character: a sharp, cutting pain felt during movement of the bowels, and a throbbing, persistent uneasiness coming on after the bowels are moved, and lasting for a variable period. The primary pain is due to the stretching of the part. The persistent after-pain is due to spasmodic contractions of the sphincter. The base of the fissure consists of muscular tissue, and free division of this muscular base relieves the symptoms, gives the part rest, and allows the ulcer to heal. The injection of cocaine into the tissue forming the base of the ulcer renders the operation painless. The division of the base of the fissure, however, does not always give relief, and in a severe case of fissure it is more satisfactory to place the patient deeply under the influence of chloroform, to introduce the thumbs within the anus and forcibly to stretch the sphincter, dividing at the same time the base of the fissure. Introduce a morphia suppository after the operation, and prevent movement of the bowels for three or four days.

Division of the base of the fissure is very frequently done by introducing the finger into the anus, and then, with the finger as a guide to the upper extremity of the fissure, a sharp pointed curved bistoury is introduced at the side of the anus and carried through the base of the fissure up to the point of the finger. This method of performing the operation is dangerous, and surgeons have been attacked with syphilis in consequence of pricking the finger with the point of the bistoury. The safer plan is to lay a straight blunt-pointed bistoury flat upon the finger, to introduce the finger with the bistoury in position, to feel for the upper extremity of the fissure, and then to turn the sharp edge of the bistoury towards the ulcer, the back of the bistoury lying on the finger. The knife is then carried through the base of the fissure by the pressure of the finger. The bistoury to be used, though probe pointed, must have a cutting edge to its extremity.

26. *Prolapsus Recti* in the child is very often a symptom of stone in the bladder. The child may be brought to you with the prolapse down for some time. It may be reduced by manual pressure, but the simplest way to reduce it is by elastic pressure with a T shaped bandage, placing a pad of cotton wool between the bandage and the prolapse. In elderly people, prolapse of the rectum is generally due to chronic relaxation of the sphincter ani, and levator ani muscles. The removal of the redundant skin around the dilated anus may assist in keeping up the prolapse. Special instruments are made for preventing its descent, but the most efficacious method is a double T bandage, with two vertical limbs, each one attached, both in front and behind, to a firm pelvic band, and crossing in the perinæum over the anus. At the point where they cross, a pad of lint is interposed between the bandage and the anus.

27. *Fistula in Ano.*—The most satisfactory way to divide a complete fistula is to pass a probe from the external opening along

the sinus, through the internal opening, and then by bending the probe to bring its point out at the anus. The probe is then cut out, and the septum is in this way completely divided. There is a groove in the probe which acts as a guide to the knife. Care must be taken in the after-treatment, by stuffing the wound, to cause it to heal from the deepest parts towards the surface.

Urinary Organs.

28. *Bladder.*—Chronic cystitis is one of the most troublesome affections that the surgeon is called upon to treat. The primary cause is often due to the introduction of organisms with an unclean instrument, and therefore in all cases in which, by the presence of increased quantities of mucus or of pus in the urine, along with frequency of micturition, a diagnosis of cystitis is made, the urine should be carefully examined for the presence of organisms. If they are present, corrosive sublimate should be administered internally in small doses, and the bladder should be washed out with antiseptic solutions. No rule can be laid down as to the special antiseptic to be used. The great point to attend to is that the bladder be repeatedly filled and emptied until the fluid escapes free from all sediment. The best way to wash out the bladder is to introduce a red rubber catheter with a "velvet eye," and to attach to this a T tube of glass. To the vertical branch of the T an indiarubber tube four feet long is fixed, and is passed into a vessel containing the fluid to be injected. This fluid should be tepid and contain an antiseptic. To the horizontal limb of the T another piece of tubing is attached, in order to carry the fluid from the bladder. The outlet tube being pressed with the finger and thumb, the vessel connected with the inlet tube is raised, and the fluid is allowed to flow into the bladder until the patient feels slight discomfort. The inlet tube is now grasped with the finger and thumb, and the fluid is allowed to escape by the outlet tube. This is repeated again and again until the bladder is thoroughly cleansed. In many intractable cases this method of treatment is not sufficient, because the bladder is an organ which is never at rest. When it is inflamed from any cause, its diastole and systole, instead of being repeated three or four times within the twenty-four hours, takes place much more frequently. In such cases it will be necessary to give the bladder rest, either by bladder drainage, according to the method recommended in the *Edinburgh Medical Journal* for December 1880; or should this plan fail, as it may do if there is much mucus which plugs the tube, the membranous urethra must then be opened on a grooved staff, and a tube introduced into the bladder through the wound, which allows the urine constantly to drain away as it escapes from the ureters. The tube introduced should be as large as possible to prevent any risk of blocking, and the bladder should be washed out through this tube, so as to clear away any mucus which may collect at the

floor of the bladder. Such a tube may be kept in for a fortnight without risk of a persistent fistula remaining.

29. *Hypertrophy of the Prostate.*—If a patient says he has to rise at night to make water, and that he makes water during the day with increased frequency, always be supicious that he is not emptying his bladder completely. He makes only the overflow from a distended viscus. When there is a tendency to obstruction of the flow of the urine in consequence of hypertrophy of the prostate, there is little doubt that the occasional passage of a large-sized bougie is of value in keeping the channel patent.

30. *Stricture of the Urethra.*—Organic stricture of the urethra is caused either by an injury to the urethra or by gonorrhœa. After a gonorrhœa passes into a persistent gleet, the source of the discharge is generally from the urethra, in the neighbourhood of the triangular ligament. This is the common situation of stricture. The patient may be brought under your notice for the first time suffering from retention of urine, or he may come complaining of a decrease in the size of the stream. The contraction of the urethra is so very gradual, that the stream may become of very small size before it attracts the notice of the patient. No method of relieving stricture is permanent, and after the urethra is restored to its normal calibre, the patient must always be informed that the occasional passage of an instrument during the remainder of his life is the only certain way of preventing a recurrence of the condition. In uncomplicated cases of stricture the treatment by gradual dilatation is the surest and safest method. In anterior strictures internal division may be adopted; in posterior strictures at the triangular ligament, if the stricture is of a resilient character, with great tendency to rapid recurrence, Holt's method may be used. If there is much perineal induration, more especially if it is complicated with perineal fistulæ, external division is the best remedy. These three latter ways of treating stricture are only to be used in exceptional cases. The great majority of cases of stricture should be treated by gradual dilatation. This can be done in two distinct ways. If the patient can keep his bed, a gum elastic catheter is passed through the stricture into the bladder. The size of the instrument will depend upon the size of the stricture. If, for example, a No. 2 is passed, and is not tightly grasped at the strictured part, a No. 3 is passed. This may also pass easily, and not be grasped. If so, a larger instrument must be introduced. If, however, it is grasped, it is fixed to the penis with a piece of sticking plaster. During the first few hours the urine flows through the instrument, but on the following day, when the patient makes water, the urine escapes along the outside of the instrument. The instrument is now loose. By its pressure it has caused absorption of the inflammatory lymph or fibrous tissue under the mucous membrane. A larger sized instrument is then passed. It in its turn is grasped, and gradually, the process being

repeated, a No. 12 is at last reached. The rapidity with which this point is arrived at will vary, but, as a rule, in uncomplicated cases it is generally found that each day represents a number in the size of the instruments, and in from ten days to a fortnight the urethra is dilated to its normal calibre. It is well not to stop at No. 12, but to go on to No. 14. This method of treatment requires constant confinement to bed.

The other method of treatment is intermittent. The stricture is gauged with a bougie. Let us suppose that a No. 3 can be passed. The result of the passage of this instrument will probably be slight decrease in the size of the stream on the following day. On the third day there will be improvement; on the fourth day a No. 3 can be passed with ease. A No. 4 is then passed, and perhaps even a No. 5 can be passed. The great point to attend to is not to attempt too much at each time, but to be satisfied with the passage of one or two instruments of a larger size than the one that was previously passed. Gradually by this method the full size is reached. If the patient can keep his bed during the cure, the instruments may be passed every third or fourth day. If the patient is going about, an interval of a week between the passage of the instruments is preferable. There is much difference of opinion as to the best form of bougie to use. Many surgeons use the French bulbous-pointed flexible bougies. Other surgeons use a metallic instrument—either the cylindrical bougie with a rounded point and of equal calibre throughout, or a solid metallic instrument with a bulbous point and gradually increasing from the neck, so as to be more or less of a wedge shape. The writer prefers the metallic instruments, and if the bulbous-pointed metallic instruments are used, care must be taken not to exert any force in passing the bougie, because its wedge shape, especially as this is very gradual, greatly increases its power, and, in fact, it may be used forcibly to distend the stricture. If used in this way, it does not act in the same way as the old cylindrical bougie, which is intended simply to set up a slight irritation, and cause absorption of the fibrous tissue. If the wedge-shaped bougie is used, it may not only do this, but may mechanically stretch the strictured part, and to a certain extent approach in principle to the other mechanical means used, such as Holting, internal or external division, in all of which the action is mainly mechanical, the fibrous tissue being ruptured or divided.

31. *Retention of Urine.*—(*a.*) Retention may occur after an operation, such as ligature of internal piles. In this case the condition is a purely reflex one, and is easily relieved by the use of a large-sized red rubber instrument, thoroughly purified by injecting through it a weak solution of corrosive sublimate, and anointed with a weak antiseptic oil, *e.g.*, vaseline mixed with oil of eucalyptus, half a drachm of the latter to an ounce of the former.

(*b.*) Retention of urine may also occur as a complication in an

aeute gonorrhœa. This is rare if the urethra has previously been perfeetly healthy. In such cases there is a eombination of aeute inflammation with spasm, and every endeavour ought to be made to relieve the eondition by the use of hip-baths, hot fomentations, large doses of bromide of potassium, and morphia suppositories. An instrument should only be used when these fail. A flexible instrument will not do; and a metallie instrument, which should be of large size, is necessary. The catheter should be thoroughly purified by passing through it a stream of 1 to 20 carbolic lotion; and the form of metallie eatheter most easily kept pure is that in whieh the portion between the eye and the point of the instrument is solid, instead of forming a little eul-de-sae, whieh it is often very diffieult to eleanse thoroughly. The spasm is overcome by gentle steady pressure. Even with the greatest gentleness there is often severe pain, and the injeetion of a drachm of a 4 per cent. solution of eoeaine before introdueing the instrument gives great relief.

(*c.*) Retention of urine may also oeeur in eonsequence of the superaddition of an aeute inflammation, with spasm, to an old standing organie strieture. Here, again, the hip-bath, with the other means above reeommended, should always be tried in the first instanee before attempting to pass instruments; and if the surgeon has no previous knowledge of the ease, and is unaequainted with the size of the organic strieture, he should not at onee use a small instrument, but begin with a No. 6 or No. 7; and if he fails to pass this, he may then try smaller instruments. The smaller the instrument the greater is the risk of laeeration of the mueous membrane of the urethra. If, after a fair trial with instruments, he fails to relieve the retention, he should aspirate above the pubis, eontinue the use of fomentations and sedatives, and on the following day he will find either that the retention is relieved, or that he is now able to pass an instrument along the urethra into the bladder. This use of aspiration is of value. Repeated aspirations in bad eases of strieture with retention are not, however, to be reeommended. In sueh eases there is a tight strieture, and it is best here to pass a large-sized instrument down to the strieture, and the patient being tied up in the lithotomy position, to eut down in the middle line on the point of the instrument, to open the urethra, and, using a fine grooved probe, to seareh for the stricture; and, passing the probe along it, to divide the strieture with a narrow knife, passed along the groove in the probe. A full-sized gum elastie eatheter is then tied into the bladder. In this way the retention is relieved, and the stricture is divided.

The toleranee of instrumental interference with the urethra varies very greatly in different people, and it should be a rule in practiee, in eases in whieh the surgeon is entirely ignorant of the sensitiveness of the patient, not to pass an instrument, for the first time, in any eireumstanees in whieh the patient may be exposed to wet or eold. Before the passage of an instrument, it

is well to administer 5 grains of quinine, or some of the more recently introduced antipyretics, *e.g.*, kairin or antipyrin. These remedies have an undoubted value in checking urethral fever. Their power is increased by giving the patient a drink of warm gruel immediately after the instrument has been passed. Shivering and rapid rise in temperature, after the passage of a bougie, must not be confounded with the so-called "catheter fever," which has within recent years been brought prominently under notice by Sir Andrew Clark. The "urethral fever" is a reflex condition, depending upon the sensitiveness of the urethra. The true cause of "catheter fever" was fully explained at the discussion on Sir A. Clark's paper, read before the Medico-Chirurgical Society of Edinburgh (see *Edinburgh Medical Journal*, April 1884).

(*d.*) Retention of urine in old men is generally due to a congestive attack of the prostate superadded to hypertrophy of the gland. Here, again, the congestion should, if possible, be relieved by hip-baths, fomentations, and sedatives, and, if instrumental assistance is required, in the great majority of cases the red rubber instrument relieves the retention. If the rubber instrument fails, then a metallic one is necessary. In cases in which there is a distinct valvular obstruction from enlargement of the middle lobe of the prostate, the difficulty may be overcome by passing a large-sized gum elastic catheter with a metallic stylet *in situ* down to the obstruction. If the instrument is then withdrawn to the extent of an inch, by pulling on the stylet, the point of the catheter will rise vertically in the bladder.

(*e.*) Retention in young children is very frequently due to the presence of a calculus in the urethra. In rare cases it may be due to malignant disease of the prostate, and sometimes it is due to abscess in the prostate. These conditions are comparatively rare, and need not here be dwelt upon.

III. Upper Extremity.

32. *Amputations of the Hand.*—In partial amputation of the fingers and thumb, utilize any available skin for the flaps. Let your main object be to leave as long a stump as possible; do not sacrifice length in order to follow any special method of amputation. This being the guiding principle, let the cicatrix be, if possible, posterior, using the tissue on the anterior aspect of the digit for the principal covering to the divided bone. When the injury or disease is such as to necessitate amputation at a higher level than the attachments of the flexor and extensor tendons to the second phalanx, is it right to go at once to the knuckle and perform complete amputation of the finger? If the tendons can be saved and attached to the bone, then the first phalanx should be left; if this cannot be done, then amputate at the metacarpo-phalangeal joint.

In amputating a digit, or a digit along with a portion of its metacarpal, avoid, if possible, any interference with the palm of the hand; avoid a cicatrix in the palm: a cicatrix in this situation is apt to be tender, and this interferes with the grasping power of the hand.

In amputating a finger do not interfere with the breadth of the hand. In a case requiring removal of one or more metacarpals leave, if possible, healthy periosteum; new bone is formed, and a more useful hand is the result. Let this rule regarding the periosteum hold good, very specially in connexion with the metacarpal bone of the thumb. Any osseous projection at the radial edge of the hand is a point of attachment for the muscles of the ball of the thumb, and is of the greatest use as an opposing point to the fingers.

In patients in whom manual labour is their source of income, do not, in amputating the fore and little fingers, interfere with the heads of the corresponding metacarpals, if a sufficient covering can be obtained. In other cases, for the sake of appearance, the head of the metacarpal may be removed obliquely.

Take, if possible, your main flap in amputating any of the fingers, from the flexor aspect of the finger. Do not approach the palm in your incisions. In the middle and ring fingers the best result—looking to use and not to appearance—is obtained in the following way: Enter the knife at the knuckle, carry it outwards and forwards into the web until a point midway between the anterior and posterior aspects of the finger is reached. Do the same on the other side of the finger; these two incisions form a right angle with each other. A flap is then made from the anterior aspect of the first phalanx. The finger is removed, and the flap is turned back into position, the apex of the flap fitting into the angle where the incisions begin over the knuckle. By this method the incisions do not approach the palm, the breadth of the hand is not interfered with, and the resulting cicatrix is posterior.

In crushes of the hand save as much as possible; save a finger or a portion of a finger; save any part of the thumb; save any portions of the metacarpals. The most useless natural hand is more useful than any artificial substitute.

33. In *contractions of the palmar fascia* Busch's operation in severe cases, affords the best result. In simple cases the subcutaneous division of the tense fibres is generally sufficient. It is to be remembered that there are two directions in which the contracted fascial fibres must be divided, parallel to the skin surface and at right angles to the skin surface; by the first, the fibres at right angles to the skin surface, which dip down between the flexor tendons, are divided; by the second, the longitudinal fibres of the contracted palmar fascia are divided.

Busch's operation consists in dissecting the contracted fascia from the flexor sheaths by a V-shaped flap, the apex of the flap looking to the wrist; the fingers are then extended, and the flap

attached with horse hair stitches to the edges of the incision, while the opposing edges of the proximal portion of the raw surface are accurately stitched together. The result is a Y-shaped cicatrix, and an extended finger or fingers with no tendency to subsequent contraction.

34. In *wounds of the palm* the persistent hæmorrhage is often due to the palmar vessels being simply punctured, and not cut fairly across. Divide the wounded artery by deepening the accidental wound. Retraction of the wounded vessel takes place, and simple pressure is sufficient to arrest the hæmorrhage. Check the force of the blood flow by fully flexing the forearm on the upper arm with a pad at the bend of the elbow. By these means the hæmorrhage is arrested; if it still persists, plug the wound in the palm; if this fails, tie the brachial artery.

35. *Whitlow.*—In deep-seated digital inflammations over the first and second phalanges, the cause is either an inflammation of the flexor sheath, or it may have a periosteal origin. In inflammations over the anterior aspect of the terminal phalanx, the cause is periosteal, and the worst that can happen is necrosis of the terminal phalanx.

In all cases make your incision early, central and in the long axis of the finger. Relieve tension, and prevent spread of the inflammation from the flexor sheath on the finger, to the common flexor sheath on the anterior aspect of the wrist. In periosteal cases early incisions prevent necrosis of the affected phalanx. Whitlows are infective conditions, and are due to a colony of micrococci. The periosteal whitlows are cases of acute suppurative periostitis.

The infective character of these conditions must not mislead the surgeon into supposing that careful antiseptic precautions are unnecessary. Sepsis and infection are perfectly distinct conditions. Relieve the tension, and the evil effects of the pathogenic micrococci will soon subside; prevent sepsis caused by the entrance of septic organisms from the external air, and rapid healing will be the result. In patients who are liable to whitlows, as in people who suffer from boils and carbuncles, administer corrosive sublimate internally, it is a most powerful anti-fermentative.

In *inflammation of the common flexor sheath* relieve the tension by making an incision into the sheath in the forearm above the annular ligament. Take care and not injure in your incision the median nerve; adopt Hilton's method to avoid this risk. After opening the flexor sheath in the forearm, pass a curved probe-pointed bistoury from the wound under the annular ligament, divide it with the knife, and in this way the palmar tension is effectually relieved.

36. When called on to perform *amputation* for injury or disease in the upper extremity, do not follow, at the cost of length, any special method of amputation; get your flaps as best you can, so as

to obtain as long a stump as possible. The longer the stump the easier it is to fit on an artificial substitute. In severe injuries of the upper extremity in which an endeavour is made to save the limb, more especially in cases in which the bones are injured, in which the line of fracture is oblique, or in which, from comminution of the bones, it is difficult to keep the fragments in accurate position, remember that the use of the extension apparatus is as valuable in the upper as it is universally acknowledged to be in the lower extremity. Thick sheet lead makes a most efficient splint, it can be easily moulded to the injured limb over the dressing; by its weight it steadies the limb and keeps it at rest.

37. In all *fractures* near joints the soft tissues are to a certain extent saved from injury when the bone gives way, but still in all cases there must be some injury to the tendons, muscles, joint, and ligaments. These structures require, for the proper performance of their functions, mobility; prolonged rest to prevent any risk of non-union of the fractured bone, may be followed by stiffness of the neighbouring joint, by adhesions of the ligaments, and organized effusion into the sheaths of the tendons. The result is a united fracture with a stiffened joint.

Non-union of bone does not occur in consequence of occasional gentle passive movement along with massage, if in the intervals the parts are kept at perfect rest. Non-union is much more likely to occur if slight constant movement is allowed between the broken ends. For example, in fracture of the shaft of the humerus, and in fracture of the shafts of the radius and ulna, it is important to keep the elbow-joint at rest by means of a rectangular splint. If the elbow-joint is not kept quiet, there is more or less *constant* movement at the seat of fracture. This movement is very different from gentle passive movement every second day, with perfect rest in the intervals, as in fractures in the region of the wrist, elbow, and shoulder.

In Colles' fracture allow the patient to move his fingers and thumb after the first week, and after ten days take off the splints every second day and move the fingers, thumb, and wrist-joint gently. Take off all splints at the end of 4 weeks. Too prolonged rest in this injury often ends, more especially in old people, in irremediable stiffening of the fingers, thumb, and wrist-joint.

In fractures into the elbow-joint early gentle passive movement at the end of a fortnight every second day prevents stiffness of the elbow-joint.

In fractures of the upper extremity of the humerus begin passive movement after a fortnight.

In *dislocation* of the thumb backwards at the metacarpo-phalangeal joint, dorsi-flexion of the thumb, with pressure on the head of the dislocated phalanx, is the simplest way to treat the case. In dislocation of the fingers the extension is best made

by means of a toy made of plaited strong grass so arranged that it ean be easily slipped over the finger, but when it is pulled upon it grasps the finger tightly.

Fractures of the third and fourth metaearpals are diagnosed with diffieulty. They are best treated by an anterior splint. Oblique fraetures of the phalanges are most troublesome. It may be neeessary, in sueh eases, to apply extension. An anterior splint, earefully padded so that there may be no pressure on the ball of the thumb, stretching from the bend of the elbow well beyond the tips of the fingers, is fixed to the forearm by sticking-plaster. An elastie band is attaehed to the injured finger by stieking-plaster, and extension is kept up by fixing it to the extremity of the anterior splint.

In fraeture of the phalanges utilize the neighbouring fingers as lateral splints, padding carefully between the fingers so as to prevent diseomfort, exeoriation, and itehing. Skin should never be allowed to remain for any length of time in eontaet with skin. In fixing the arm to the trunk in fracture of the claviele and in fracture of the upper extremity of the humerus, if a layer of lint is not plaeed between the arm and the ehest mueh diseomfort will follow.

In these fraetures it will generally be found that the broken ends of the fractured bone are best brought into apposition by bringing the arm well aeross the ehest, so that the hand lies on the opposite shoulder.

In fixing the arm the use of a long strip of stieking-plaster fixing the limb to the trunk is a simple way of treating these injuries. In green-stick fraeture of the elaviele, a eommon aeeident often overlooked at the time of the injury, the strip of sticking-plaster is the best method of treatment.

In fraeture of the elavicle at the eoraeo-elavieular ligament there is no displaeement. In fraeture of the elaviele external to the eoraco-elavieular ligament there is no downward displacement, and the forward displaeement is not observed at the time of the fraeture, but beeomes very evident at a subsequent date. Treat all fractures by simple means; let wood, pasteboard, and lead (in eases in whieh the patient is eonfined to bed) be your mainstays; avoid all special forms of apparatus.

In *sprains*, earefully applied elastie pressure, with wadding, eombined with massage and passive movement, gives the best results.

In diagnosing an injury look before you toueh the limb. Remember the normal relations of the styloid processes in diagnosing injuries in the region of the wrist; the relation of the head of the radius to the external eondyle, the relation of the oleeranon to the internal condyle of the humerus in the elbow-joint; and let the coraeoid proeess and its relation to the head of the humerus be the prineipal guiding landmark in injuries of the region of the shoulder.

Always expose the uninjured corresponding region, examine it in the first instance, and let it be your standard (having satisfied yourself that it *is* normal) in diagnosing the injury on the opposite side.

IV. Lower Extremity.

38. In amputations of the toes, a partial amputation may be performed in the great toe; in the other toes partial amputations are inadmissible; avoid any incision in the sole of the foot. Remember that the foot is a tripod, and that its stability rests on the integrity of three points of support—the ball of the great toe, the ball of the little toe, and the os calcis; interference with any one of these, lessens the value of the foot as a basis of support. Any narrowing of the foot approximating the two anterior points of support also renders the foot less stable.

Utilize the plantar surface for the principal flap in amputations through the tarsus and at the ankle joint. In amputation at the tarso-metatarsal joints and in amputation through the centre of the tarsus, after marking out the flaps by incisions down to the bones, it is best to disarticulate and then dissect the bones off the long plantar flap from behind forwards.

In all amputations in the lower extremity sacrifice length in order to obtain a stump that will bear pressure. A painful stump is worse than useless; with it the patient has no comfort, and cannot wear an artificial support.

In amputation above the ankle the long anterior flap gives the best result. In amputations below the knee the modified circular is, as a rule, preferable to the long posterior flap. If the latter method is adopted a posterior leaden splint, curved so as to support the long posterior flap, is the best means of preventing retraction. In all amputations the posterior leaden splint is the best steadier of the stump. Sheet lead, from its weight and plasticity, makes an excellent splint in many injuries, and after operations both in the upper and lower extremities.

In sawing the bones in amputations in the leg always enter the saw upon both bones at once, so that the fibula may be divided before the tibia. In amputation below the knee it is often difficult to secure the arteries. When such difficulty arises take a curved needle, threaded with catgut, and pass it into the tissues behind the bleeding point so as to include the tissues around the vessel in the ligature.

In Carden's, Gritti's, and Spence's amputations in the region of the knee-joint take care not to make the posterior flap too short. The resulting cicatrix always tends during consolidation of the stump to pass backwards, because the posterior group of muscles are divided further from their origins than the opposing muscles on the front of the thigh.

In amputation for injury through the shaft of a long bone the

periosteum may be divided at a lower level than the bone; if this is done it is best to save the periosteum on the anterior surface of the bone, and allow a flap of periosteum to hang over the divided medullary cavity. Do not stitch it for fear of deep-seated tension.

In amputation at the hip-joint amputate by the circular method below the trochanters, tie the vessels, turn the patient round so that he lies on the uninjured side, make a vertical incision over the trochanter, keeping well back where the vessels are not important and the trochanter is most superficial, and disarticulate the head of the bone.

In all amputations for injury, in which the patient has lost much blood, save any blood escaping at the time of the amputation, and mixing it with a 5 per cent. solution of phosphate of soda, as described by Mr John Duncan (*Ed. Med. Journal*, April 1886), inject it into the main vein before stitching together the flaps.

39. *Ulcers* are due to a local or constitutional cause; in most cases the local cause is the direct excitant, the constitutional cause rendering the patient more liable to evil consequences from the local irritation. Unless in the case of a burn or other distinct traumatic cause, always be suspicious of a constitutional cause if the ulcer is situated on any part of the body except the lower half of the leg, and even there be suspicious if the ulcer is on the posterior aspect of the limb. Ulcers are prevented from healing either by a congested or an indurated state of the limb. Simple rest in the recumbent posture, elevation of the limb, and careful elastic pressure are the indications for treatment under which painful, fœtid, and spreading ulcers will, with few exceptions, become painless, sweet, and clean. Improve the vitality of the soil, and the putrefactive organisms will die out, not finding a suitable nidus for their further growth and development. The use of antiseptics, such as iodoform, and chloride of zinc (40 grs. to the ounce), is of secondary importance to an improvement in the vitality of the limb. They are, however, very valuable as adjuncts to the elevation treatment. After the ulcer has assumed a healthy appearance, if the patient must go about, apply elastic pressure *before* the patient rises from bed. This is a most important point, which possibly Dr Martin was the first to insist upon.

40. When a patient is brought under your notice with pain in the knee, for which you cannot find any evident local reason, always carefully examine the hip; and in a patient who limps as if from hip-joint disease, if you do not find in the hip evident objective symptoms of joint disease, always carefully examine the back. He may be suffering from vertebral disease, with effusion into the psoas muscle under the psoas fascia.

41. In fractures of the leg use the box splint—two pieces of wood rolled in a sheet. See that the foot is kept at right angles to the leg, and thus retraction of the heel is prevented. Take

care that there is no eversion of the foot. In oblique fractures use extension.

In fractures of the patella fix to the anterior aspect of the thigh a large piece of sticking-plaster, and make through it extension on the quadriceps extensor cruris—elevating the limb on an inclined plane with a foot piece.

In fractures of the thigh use extension with the weight and pulley, take care that the weight is not too heavy, and measure the limb every third day, so that the weight may be reduced. The too prolonged use of the weight may result in delayed union or in non-union. In children, in restless adults, and in cases of delayed union, use a double long splint with a transverse cross piece. In other cases a single long splint is sufficient; with the double long splint the patient is fixed in a wooden box, so that he can only move his arms and his head.

V. Syphilis.

42. If common diseases are the most important, then this disease and its results are among the most important. Taught by Spence that soft chancres and syphilis are due to one poison, taught by Syme that all the evils of syphilis are due to mercury, and knowing that these doctrines are still held by many surgeons, I am glad of this opportunity of stating my firm opinion that there are two distinct poisons, and that mercury is of immense value in the treatment of syphilis.

Syphilis is an infective fever; a specific organism is planted on an abraded surface, it lies quiescent for a time, and germinates if the soil is suited for the growth of the organism; if the soil is unsuited the growth is aborted, but I have no evidence that this aborted form is the poison which gives rise to a soft chancre.

It germinates locally; it passes into the blood stream through the lymphatic circulation; in its passage along the lymphatic vessels it is arrested in the lymphatic glands and there germinates; it is also arrested in the capillaries of the skin and mucous membranes, and there gives rise to various local lesions, the different early and superficial skin and mucous membrane lesions. The poison may get a firm hold of the individual either in consequence of the virulence of the poison or in consequence of the suitability of the soil, and then gives rise to evil sequelæ or bad consequences, often called tertiary symptoms.

These sequelæ do not necessarily follow, and are becoming less frequent: 1*st*, because the poison is becoming less virulent; 2*nd*, because the poison is not now finding so suitable a nidus as it once did. These two factors interact on one another; the syphilitic poison is becoming less virulent because both factors are at work; the country is becoming gradually syphilized, the soil is being gradually worn out, the poison is thereby gradually

being weakened. To grow a plant and to get good seedlings you require a healthy vigorous plant and a good soil; if the soil is worn out the seedling, however strong, does not thrive; if the seedling is weak, the soil, however suitable, does not favour its vigorous growth and development.

At one time mercury, given in large doses until the patient was poisoned, so weakened the individual that, although the secondary symptoms might be masked, and apparent temporary good results followed, no permanent good resulted, and tertiary symptoms were liable to occur. Nowadays the sequelæ are principally observed in weaklings—weaklings either from hereditary transmission, or from acquired feebleness, the result of evil courses persisted in by the person himself after the poison had entered his system.

Syphilis is gradually wearing itself out, but still the administration of mercury in small doses is of value. The patient will tell you that he feels the better of it, that it acts as a tonic. The explanation of this feeling of wellbeing is probably a simple one. Syphilis is a fermentation, a zymotic disease; the fermentation is due to the growth of an organism in the tissues. Corrosive sublimate has been proved to be a most powerful anti-fermentative. Give it in doses which will not be poisonous to the individual, but poisonous only to the organism of syphilis, and the growth of the organism will be checked, the strength of the individual is not impaired, and gradual elimination of the poison will take place, because, like all zymotic conditions, it has a tendency to a natural cure. The disease may undoubtedly, taking advantage of this tendency, be treated without mercury; by attention to the general health, by keeping the individual at a high level of vitality the poison may gradually disappear from the system, by opposing to its growth and development the anti-fermentative action of the healthy tissues; but even in healthy people I am satisfied that mercury is of value, and my rule is to give it from the very beginning, and continue it for a year or eighteen months from the beginning of the attack. The feebler the individual the greater is the necessity of a mercurial course.

The diagnosis of syphilis is founded on the period of incubation. If, after a suspicious connexion, a period beyond ten days elapses before any local manifestation is evident, then the probability is that we have to deal with a case of syphilis. In such a case begin the mercury at once. In making your diagnosis do not be deluded by a local manifestation, either in the form of a gonorrhœa or a soft sore, either of which appear shortly after connexion. The patient asks, "Have I syphilis?" How often is the answer given, "No," in one sense true—true of to-day, as far as any one can tell, but not necessarily true three weeks hence. Your answer should be, "I cannot tell; you *have* a gonorrhœa; you *have* a soft sore, but the time has not yet arrived to enable me to say that

you *have not* syphilis. Six or eight weeks must elapse before I can speak with any certainty." The patient is not satisfied; this you cannot help.

Another snare to the unwary practitioner is that the patient always tends to blame the *last* connexion. This connexion is probably the cause of the gonorrhœa or soft sore, while the patient may have been inoculated previously with the syphilitic poison, which may at the time you see him be lying quiescent, and become evident at a subsequent date. At the end of the first week the gonorrhœa or soft sore becomes painfully evident; the average period of incubation in syphilis is three weeks; if two connexions follow one another at an interval of less than a fortnight, it is evident that when the patient comes to you with the gonorrhœa or soft sore you cannot speak of his freedom from syphilis, which may show itself soon after the gonorrhœa, if caught from the first connexion; if caught from the second connexion, it may not show itself for a fortnight or three weeks after you are consulted.

The hard nodule, typical of syphilis—not a sore, not an ulcer, but an elevation, a local hypertrophy at the seat of inoculation—shows itself from ten days to eight weeks after connexion. The average period of incubation is, in my experience, three weeks. This typical local hypertrophy may ulcerate if it is irritated in any way, but ulcerative destruction of tissue is an accident, not an essential of the primary lesion. This fact alone seems to me to go a great way in itself to show that the poison which causes a soft chancre —an ulcer—is different from the poison of syphilis. I cannot say how they were related in the past; I cannot say what may be their relations in the future. Neither an antiquarian nor a prophet, but simply dealing with the conditions as they come before the practical surgeon at the present time, I have no hesitation in saying that there are two distinct poisons—the one giving rise to a local ulcer, the other to a constitutional condition; the one probably more nearly allied to a putrefactive poison, the other to a truly infective poison; the one septic, the other pathogenic.

The typical syphilitic hypertrophy may be masked if the poison has effected its entrance on the urethral mucous membrane, it may also be masked if the poison has its seat on a soft sore; the latter is more common than the former. These cases do occur, and often deceive the practitioner. They are, however, no evidence that the two poisons are one. There is, in my opinion, no logical resting-place between accepting the belief, held by John Hunter, and disproved by Benjamin Bell, that gonorrhœa, soft sore, and syphilis are one disease, and the belief that there are three poisons, often met with in one and the same person at one and the same time. It will surely not do to argue that because gonorrhœa is very rarely followed by syphilis, therefore these conditions may be considered as separate diseases, but because syphilis not un-

frequently follows a soft sore, it is therefore more likely that these two conditions are one disease. May not these clinical experiences be simply explained by the gonorrhœal poison thriving in a different habitat from the syphilitic and soft sore poisons; that the latter have the same habitat is no proof that they are the same plant. The position is, in my opinion, untenable logically, untenable clinically.

In concluding, for the time being, these demonstrations, I almost feel that an apology is required. They deal with such common things, and they are so well known to many, that I fear they are hardly worthy of a place in the *Edinburgh Medical Journal*. My excuse is, that perhaps I have directed attention to some practical points which I have learned by experience and by profiting from my mistakes. At any rate, they are sufficient to illustrate the position insisted on in the first of these lectures, that the simple common diseases and injuries are worthy of consideration, and that ignorance regarding them is more fatal to success in practice and to personal comfort than ignorance regarding the rarer and more serious surgical diseases and operations.

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